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ALAUDES

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The little beetles of the genus *Alaudes* are among the most singular and interesting of our blind Coleoptera. The original specimens were collected by Dr. George H. Horn in or about 1864 in Owens Valley in eastern California, and were described by him as *A. singularis* in 1870 in his Revision of the Tenebrionidæ. Horn cites simply "California" in his description, but the locality named above is that given by me in my Coleoptera of southern California, and is doubtless correct though I cannot at the moment recall my source of information.

As indicated in the reference quoted, the next record of capture was by Professor Wickham, who about 1890 secured a few specimens in southeastern Oregon; then a single example by Koebele in the Argus Mountains of southeastern California not far south of the original habitat.

In 1893 and 1895 I took about a dozen examples from beneath boards in my garden at Pomona, California, and in 1897 Dr. Fenyès collected about an equal number at Azusa, some fifteen miles west of Pomona. Since then Dr. Fenyès, Mr. J. O. Martin and the writer have on a number of occasions taken specimens at Pasadena. In his recent paper on this genus Dr. F. E. Blaisdell mentions the taking of a single specimen by himself at San Diego in 1890, also a series collected by Nunenmacher at Goldfield, Nevada (1907), and a few examples by Dr. Van Dyke in Alameda County, California. This about exhausts the record of captures so far as known to me, and shows that the genus is distributed from southern California to Oregon.

All specimens collected conform very closely in size, appearance and general characters to the original of Horn's description, and up to the time of Dr. Blaisdell's paper (Trans. Am. Ent. Soc., 1919), it was generally assumed that of so singular an insect we had but a single species. Moreover the things were so scarce that very few collections contained examples

from more than one locality, so that opportunities for comparison were limited. Dr. Blaisdell's paper then represents the first attempt to get together and carefully compare material from different localities, and as a result of his study he has announced the existence of four distinct species in the material examined.

Aside from some quite obvious variations in the form of the erect elytral scales, and some small differences in bodily outline, there is almost nothing of moment on which to base specific distinctions, and it is quite possible that none of the observed variations are more than racial in character. I am, however, for the present inclined to accept the doctor's conclusions as in the main correct, and this view is supported by the fact that with one probable exception, so far as the material in hand is concerned, the supposed species are quite constant, and each so far as known occurs with a different species of ant.

The small and more or less illusory differences in the form of the scutellum referred to by Dr. Blaisdell I cannot believe have any specific significance, my own experience being that the scutellum is transversely triangular with but slight variation, in all forms.

It is somewhat remarkable that neither Horn nor Blaisdell anywhere speaks with precision with respect to the erect scales of the elytral intervals, the implication in their descriptions being that all the intervals are thus clothed, whereas it is always only the alternate ones that are so affected.

It is necessary to correct one error in Blaisdell's paper of which I seem to have been unwittingly the cause. His identification of *singularis* Horn is based on a series of examples taken by Mr. J. O. Martin in Pasadena, where Mr. Martin and I together collected the species, and for which I used the name *singularis* merely because I shared the general assumption that all *Alaudes* were of one species. I had not at that time seen Horn's type series, and had the doctor communicated with me I should promptly have disavowed any authority in the matter. I have since examined the Horn types and can say positively that they not only differ from this Pasadena species, but also in greater or less degree from all other species of Blaisdell's table.

On the supposition that the kind of differences observed in

this genus are of the order of specific characters, there are in my collection two other forms meriting distinctive names. The following table contains all at present known to me.

Table of Species

- | | |
|---|-------------------|
| 1. Elytral vestiture typically slender and hair-like throughout, but varying to feebly clavate, especially toward the sides and apex; marginal setæ virtually uniform in form and length | <i>setigera</i> |
| — Elytral vestiture feebly clavate except along the side margins, where long slender setæ alternate with the much shorter clavate ones | <i>alternata</i> |
| — Elytra vestiture nearly uniformly moderately clavate throughout, form of elytra distinctly narrower and more parallel | <i>squamosa</i> |
| — Elytral vestiture consisting throughout of rather shorter capitate clavate scales of uniform length | 2 |
| 2. Hind angles of thorax including the investing scales somewhat obtuse; elytral punctures very coarse, all the interspaces narrower than the punctures | <i>singularis</i> |
| — Hind angles of thorax sharply rectangular or even a little prominent; elytral punctures rather smaller, at least toward the suture, where the interspaces are as wide or wider than the punctures | 3 |
| 3. Prothorax not appreciably narrower than the elytra, form more oblong | <i>fallax</i> |
| — Prothorax perceptibly narrower than the elytra at middle, the latter shorter and slightly oval | <i>testacea</i> |

1. ALAUDES SETIGERA Blaisd.

Trans. Am. Ent. Soc., XLV (1919), p. 310

singularis Blaisd. (not Horn), *ibid.*, p. 307

With the San Diego type of this species, characterized by Blaisdell as having the erect vestiture of the elytra "slender and hair-like," I am compelled to unite the Pasadena species erroneously regarded by him as the *singularis* of Horn. Of this latter he says: "Four of the sixteen specimens of Mr. Martin's series have all the elytral scales quite linear but not hair-like or setiform." In a good series of this species in my collection there are individuals in which the elytral vestiture, if not precisely identical, is so nearly like that of *setigera* as to forbid dissociation. Of one of these, recently sent to the doctor for an expression of opinion, he writes: "I consider it to be *setigera*." The transition between these specimens and those having the

elytral setæ in greater or less part fusiform to feebly claviform is perfectly gradational.

Type locality—San Diego, California. All other specimens known to me were taken at Pasadena, California, where they occur in the Arroyo Seco under stones, with *Formica pilicornis* Emery.

2. *Alaudes alternata* Fall, n. sp.

The chief distinguishing character of this species is the alternation of moderately slender clavate scales with much longer hair-like setæ along the lateral edge of the elytra. There is another feature not mentioned in the table which seems quite constant. In the present species the prothorax is widest close to the apical angles, from which point the sides converge obliquely backward with a moderate degree of sinuation. In *setigera* the point of maximum width is less near the front angles, the sides showing a longer anterior arcuation followed by a deeper sinuation; the hind angles being rectangular in both species. The erect elytral scales are nearly uniformly gradually feebly clavate, but some variation within narrow limits is observable on close attention. The sutural interspace is wider than the adjacent stria punctures, and the next one or two intervals are usually as wide as the punctures. The form of the elytra is nearly the same as in *setigera*.

Length, 1.6 to 1.75 mm.; width, .6 to .7 mm.

Habitat. Pomona (type) and Azusa (Fenyès), Los Angeles County, California.

The first specimen of this species was found by me November 5, 1893, beneath a board in my garden at Pomona. Two years later, during the first half of November 1895, one or two specimens at a time were found in like situations until about a dozen were secured. About half of these were distributed by myself or the late Mr. Ricksecker as *A. singularis*; six examples remain in my cabinet. None of these specimens appeared to be associated with ants, but Dr. Fenyès a few years later took a small series at Azusa in April in nests of *Solenopsis molesta*

validiuscula Emery, one of which with the host ant is in my collection.

3. ALAUDES SQUAMOSA Blaisd.

Trans. Am. Ent. Soc., XLV (1919), p. 309

This species was described from a series of specimens collected by Mr. F. W. Nunenmacher at Goldfield, Nevada, October 18, 1907. It is rather narrower, with the sides of the elytra more strictly parallel than in any of our other species. The erect elytral scales are more distinctly clavate than in the two preceding species, but less strongly so than in those which follow. Blaisdell describes the hind angles of the thorax as obtuse, but in two paratypes sent me by Mr. Nunenmacher they are not perceptibly so, and I should certainly call them rectangular. The prothorax is widest far forward, the outline being nearly as in *alternata*.

The specimen in the National Museum collection from the Argus Mountains, southeastern California, taken by Koebele, appeared to me to be referable to the present species when examined by me some years ago. The specimens sent me by Nunenmacher were accompanied by the host ant, which proves to be *Cremastogaster californica* Emery.

4. ALAUDES SINGULARIS Horn

Trans. Am. Phil. Soc., XIV (1870), p. 362

This, the original species of the genus, is represented by three specimens in the Horn collection. A fourth specimen had evidently once been present, but at the time of my visit was not on the "point" nor could I find it in the bottom of the box. There are also two examples in the LeConte collection, evidently a part of the original series taken by Horn in the Owens Valley, California. I have seen no others.

This species is noticeably stouter than *squamosa*, the sides of the thorax less sinuate, more oblique, with the hind angles perceptibly obtuse. The elytral punctures are all very coarse, the interspaces narrower than the punctures even near the suture. The erect scales are short and nearly uniformly strongly capi-

tate clavate, in which respect this species is comparable only with the two following. According to Horn specimens were very rare and were found living with a small black ant under stones. This ant is evidently a different species from others with which *Alaudes* has occurred.

5. *Alaudes fallax* Fall, n. sp.

Oblong-oval, similar in form to *setigera*, with which it agrees in having the point of maximum width of the thorax less close to the apical angles than it is in *alternata* and *squamosa*. The elytral scales are short, uniform throughout, and strongly capitate clavate. The first two or three elytral interspaces are as wide or wider than the adjacent rows of punctures. The prothorax and elytra are sensibly equal in width, and the hind angles of the former with their investing scales are rectangular.

Described from two examples taken by the writer at Pasadena, California, in nests of *Solenopsis geminata mariosa* Wheeler, and bearing dates April 6, 1912, and March 9, 1913. The latter is taken as the type.

This species is closest to *singularis*, differing in its longer anterior arcuation of the sides and rectangular hind angles of the thorax, and in its less coarse elytral striæ with correspondingly wider interspaces. The host ant is a different species.

6. *ALAUTES TESTACEA* Blaisd.

Trans. Am. Ent. Soc., XLV (1919), p. 311

This species is closely allied to the two preceding, with which it agrees in elytral vestiture. The elytra are somewhat shorter and a little more oval than in any of our other species, and are perceptibly wider than the thorax. A few specimens were collected in Alameda County, California, by Dr. Van Dyke, who has kindly sent me a paratype for examination. I do not know whether any of the host ants were secured.¹

For more detailed descriptions of the species known to him see Dr. Blaisdell's paper.

I am indebted to Dr. William M. Wheeler for the identification of the ants mentioned in the present paper.

¹ Note by Dr. E. C. Van Dyke. This host was a species of the acrobat ant (*Cremastogaster* sp.).

99 NOTES AND DESCRIPTIONS OF NEW SPECIES
OF SCARABÆIDÆ FROM WESTERN
NORTH AMERICA

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SCARABÆIDÆ

The genus *Aegialia* has a greater number of species on the Pacific Slope than has been supposed, eight in number. *Aegialia rufescens* Horn, I have taken on Mount Rainier, Washington, as well as in the high Sierra Nevada mountains. *A. cylindrica* (Esch.) is found in Alaska near the seacoast, but farther south only along cold-water streams. It extends as far south as San Francisco Bay, and in the Northwest reaches into Idaho and farther east. *A. lacustris* Lec. has been found at Banff, Alberta, and in the eastern part of Nevada County California. *A. blanchardi* Horn or a species so close to it that I cannot separate it, has been taken at Puyallup, Washington; Newport, Oregon, and along the Smith River in Del Norte County, California. *A. conferta* Horn is a streamside species widely distributed from Washington to Ensenada, Lower California. *A. latispina* Lec. is found along many stream margins from Siskiyou to Los Angeles County, and also at Prescott, Arizona. *A. crassa* Lec., our commonest species, is confined to the coast sand dunes and ranges at least from northern Oregon to Carmel, California. *A. pusilla* Horn was described as from Washington, probably Spokane. This list is thus greater by two than that given by Darlington¹ for the New England States.

In the genus *Aphodius* there is a group of large species which are more or less confined to the Pacific Slope and which are quite peculiar both structurally and biologically. To my mind, they form a definite group, but in Horn's Monograph,² three are placed in his Group G and two in Group M, the latter separated from the former by having the fimbriæ at the apex of the hind tibiæ unequal rather than equal. This character, while convenient for the separation of species, often widely removes from one another, as in this case, species which are undoubtedly of the same stock. While not wishing to destroy the usefulness

¹ Psyche 34 (April 1927), p. 99.

² Trans. Am. Entom. Soc. 14 (1887), pp. 23-25.

of Horn's valuable tables, I think that it is best in this case to study these species as a single group and I will so treat them. Besides the species discussed by Horn, there has recently been described one by Fall³ and I will add two, one of which is new, the other one long unrecognized.

The group may be characterized as containing species which are of fair or large size, black and shining; head not tuberculate; prothorax definitely narrowed behind, with a series of coarse punctures rather sparsely and irregularly placed on the disk, and with fine punctures between, the latter sometimes obscure, and with an entire lateral and basal marginal line; the elytra more or less oval, with humeri dentiform, and evidently striato-punctate; the apex of hind tibiae with equal or slightly unequal spinules and the first tarsal segment of hind legs quite long.

Synoptic Key

1. Apex of hind tibiae fimbriate with short equal spinules..... 2
- Apex of hind tibiae fimbriate with unequal spinules, clypeus emarginate at middle, broadly rounded each side..... 8
2. Clypeus angulate or dentate either side of emargination..... 3
- Clypeus emarginate at middle, broadly rounded each side..... 7
3. Clypeus distinctly dentate either side of emargination..... 4
- Clypeus merely angulate each side of emargination..... 6
4. Large species, 9 mm., clypeal emargination three-tenths width of head; prothorax subquadrate, sides almost parallel, base lobed at middle and sinuate either side; elytra oblong; first segment of hind tarsi longer than following three. Lassen County, California *gravis* Fall
- Moderate-sized species, 6-7 mm., clypeal emargination three-eighths width of head; first segment of hind tarsi about equal to next two..... 5
5. Prothorax subquadrate, sides slightly arcuate and narrowed behind, hind angles distinct but rounded, base slightly arcuate; elytra oblong, a third longer than broad. Lassen and east Siskiyou County, California..... *martini* sp. nov.
- Prothorax with sides gradually rounding into base, the hind angles almost obliterated, base arcuate; elytra oblong oval, not a third longer than broad. West Nevada..... *nevadensis* Horn
6. Elliptical yet broad, prothorax subquadrate; first segment of hind tarsi as long as next three. San Francisco Bay region to Placer County, California..... *gentilis* Horn

³ Canad. Entom. 59 (1927), p. 137.

7. Clypeus feebly emarginate at middle, genæ but moderately prominent; larger pronotal punctures only moderately coarse, not numerous and in general confined to sides and basal area; elytra oblong, more than a third longer than broad, striæ well impressed and very distinctly and crenately punctured, intervals slightly convex especially at sides. Oregon and Washington *cribratus* Lec.
- . Clypeus distinctly emarginate at middle, genæ prominent; larger pronotal punctures very coarse, umbilicate, fairly numerous toward front as well as at sides and on basal area; elytra oblong, less than a third longer than broad, striæ finely impressed and very finely punctured, intervals flat except ninth and tenth. Lake County, California (probably also Sonoma County) *cadaverinus* (Mann.)
8. Elytra oblong, striæ moderately deep and coarsely punctured, intervals slightly convex; first segment of hind tarsi as long as next three. Middle and southern California *sparsus* Lec.
- . Elytra oval, striæ fine but deep, finely punctured, intervals nearly flat on disk, slightly convex at sides; first segment of hind tarsi longer than next three. Fort Tejon, California *ovipennis* Lec.

Aphodius martini Van Dyke, new species

Large, robust, black, antennæ and legs somewhat rufous, moderately shining and not pubescent above. Head without tubercles; occiput finely, rather closely punctured, a few coarse punctures laterally; clypeus finely punctured and rugose, anterior margin moderately emarginate at middle and acutely dentate each side of emargination, sides slightly arcuate; genæ moderately prominent and subacute. Prothorax almost a third broader than long, widest in front of middle; sides slightly arcuate, perceptibly narrowed posteriorly, hind angles evenly rounded, base arcuate, faintly sinuate laterally; basal margin deep, somewhat evanescent near angles; disk convex, sparsely and irregularly punctate with moderately coarse punctures at sides and basal area and with fine punctures intermixed. Elytra oblong oval, a third longer than broad, slightly narrowed at base, the humeri dentiform; disk convex, rather deeply striate, striæ moderately coarsely and closely punctured, intervals convex and very finely punctured. Wings greatly atrophied. Beneath sparsely punctate, the sides of abdomen rugose and pilose. Mesosternum coarsely punctured, obtusely carinate between the coxæ. Posterior femora sparsely, finely punctate; the hind margin of posterior tibiæ fimbriate with short equal spinules; first segment of hind tarsi equal to next two. Sexual characters not distinctive. Length, 6.5 mm.; breadth, 3 mm.

Holotype (No. 2546, Mus. Calif. Acad. Sci.), and several *paratypes* from a series of six specimens in the collection of the California Academy of Sciences, collected by Mr. J. O. Martin

at Martins Springs, Lassen County, California (Sec. 14, T. 31 N. R. 9 E.), September 7, 1922. There are also two other specimens collected at McCloud, California, October 15, 1918, and one from Susanville, Lassen County, California, May 2, 1923, all collected by Mr. Martin. These latter are somewhat smaller, depauperized, and have the prothorax and elytra both more narrowed at base; otherwise not different.

This species which has been confused with *Aphodius nevadensis* Horn, differs markedly from the latter by having a more quadrate prothorax with larger punctures finer and sparser; a different shaped clypeus, narrower and with sides more arcuate; as well as by having the elytra less narrowed at base and the striae more coarsely punctured. It superficially more closely resembles *gentilis* Horn but, aside from the clypeal differences, has much finer pronotal punctures, is narrower and generally less robust, the elytra of *gentilis* not being a third longer than broad, less narrowed at base, and with the humeri much more evidently dentate than in either of the preceding. The first tarsal segment of the hind legs is also evidently longer in *gentilis*.

APHODIUS CADAVERINUS (Mann.)

I have in my collection a specimen of *Aphodius* which I consider to be the true *cadaverinus*⁴ of Mannerheim. It was taken by me in May 1895, near Clear Lake, Lake County California, which is in the same zoögeographical region as Fort Ross, Sonoma County, one of the few places where Eschscholtz collected in California. This species, as Horn states, is no doubt one of the members of his Group G. All of the species listed by me in the preceding table with the exception of *gentilis* Horn, *sparsus* Lec., and the one that I consider *cadaverinus* (Mann.), are restricted to regions which were not visited by Eschscholtz nor by any of the early Russian collectors who supplied the material upon which Mannerheim based his descriptions. None of these species, either, will fit the description, inadequate though it is. Of the three exceptions, *sparsus* Lec. is ruled out by being restricted to the nests of the wood rat, *Neotoma*, and never found as stated in "Trogium instar in cadaveribus exsiccatis," besides it has not the pronotal punctua-

⁴ *Oxyomus cadaverinus* Mann., Bul. Nat. Hist. Soc. Moscow 16 (1843), p. 261.

tion sufficiently coarse to be called variolate, "thorace anterieus dilatato varioloso." *Gentilis* Horn does possess the latter character and is to be found under conditions as given for *cadaverinus* (Mann.), but it possesses a type of clypeal emargination which I think Mannerheim would hardly be inclined to describe as "clypeo profunde emarginato." The true *cribratus* Lec. which Horn also lists from California but which I doubt, might possibly be taken for *cadaverinus* (Mann.), but its clypeus is only shallowly emarginate, not profoundly so, and its pronotal punctuation though coarse, not truly variolate. The species, however, which I take to be *cadaverinus* (Mann.), is closely related to *cribratus* Lec., possibly what Horn had seen from California and took to be the same, but it differs decidedly from that by being much broader and more generally robust, with clypeal emargination pronounced, the genæ also more prominent and acute, the pronotal punctures very large and variolate, and the elytral intervals flatter. With the description of *cadaverinus* as given by Mannerheim, it agrees absolutely.

Of the species mentioned above, *gravis* Fall and *sparsus* Lec. have fully developed and functional wings. The first was found by Mr. J. Ö. Martin high up in the cavity of an old dead tree in what was presumably the nest of a squirrel or rodent of some kind. The second species is always to be found in the upper layers of the manure of wood rats' nests, whether placed well up in the trees or on the ground. All of the other species have the wings much reduced and, so far as I know, have always been found either under cow manure, in old cow yards or under dead herbivorous animals. *Sparsus* is fairly common but all of the other species are very rare.

Aphodius slevini Van Dyke, new species

Small, robust, shining, rufotestaceous, elytra, abdomen and femora testaceous. Head evidently but not markedly trituberculate, the median tubercle vague, occiput moderately coarsely punctured; clypeus slightly gibbous at middle, rugose-punctate, anterior margin rather deeply emarginate, with a distinct though short denticle on each side of emargination which is turned upward, sides feebly sinuate, genæ rounded and not prominent. Prothorax one-fourth broader than long, sides feebly arcuate and gradually narrowing to front, margin not explanate, scarcely fimbriate, hind angles obtusely rounded, base regularly arcuate and with fine marginal line; disk quite convex, sparsely punctured with coarse and fine punctures

intermixed, the punctures coarser and closer laterally. Elytra one-fourth longer than broad, as wide at base as prothorax, the humeri obtuse, sides feebly arcuate; disk quite convex, finely striato-punctate, intervals flattened and with a few minute punctures. Body beneath sparsely punctate, the abdomen alutaceous. Mesosternum not carinate. Anterior tibiae smooth in front, tridentate externally, first segment of tarsus shorter than second. Posterior femora with a few vague punctures near knee, the tibiae with hind margins fimbriate with short unequal spinules, the first tarsal segment slightly longer than the following two. Length, 4 mm.; breadth, 2 mm.

Holotype (No. 2547, Mus. Calif. Acad. Sci.), a unique female, collected by Mr. L. S. Slevin, at **Carmel, Monterey County, California**, November 15, 1915, and now in the Slevin collection of the California Academy of Sciences.

This interesting little species which because of its robustness has somewhat the facies of an *Aegialia*, would come in the series 1-C of Horn's paper after *militaris* Lec. and *æmulus* Horn, from both of which it differs by its more testaceous color, smaller size and greater robustness, rugose clypeus, and double type of pronotal punctuation.

Atænius cribratus Van Dyke, new species

Form elongate, parallel, but moderately convex, rufopiceous, beneath lighter and more rufous, antennæ and palpi rufotestaceous, slightly shining. Head coarsely, densely punctured posteriorly; clypeus rugulose, anterior margin broadly and distinctly emarginate, a distinct angulation or minute denticle each side, sides arcuate, genæ moderately prominent and obtuse. Prothorax about one-third broader than long, slightly narrower posteriorly, sides feebly arcuate, hind angles rounded, base arcuate, basal marginal line distinct, lateral and basal margins crenulate and finely fimbriate; disk moderately convex, with slight depression near anterior angles, coarsely, closely and cribrately punctured, finer in front. Elytra as wide as prothorax, humeri markedly dentiform, sides nearly parallel, striæ deep and narrow, finely obscurely punctured, intervals broad and subcarinate, their sides obliquely declivous, with a row of pronounced punctures on either side close to striæ, the margins as a result slightly crenulate. Mesosternum opaque, finely punctate-granulate, carinate between the coxæ. Mesosternum coarsely, sparsely punctured at middle, more rugose and finely at the sides. Abdomen coarsely punctured throughout. Anterior tibiae tridentate externally and feebly crenate above. Posterior femora sparsely, rather coarsely punctate, with at most a feeble trace of a marginal line near the knee; posterior tibiae without accessory spinule; the first tarsal segment about equal in length to the long spur. Length, 4 mm.; breadth, 1.8 mm.

Holotype (No. 2548, Mus. Calif. Acad. Sci.), collected by Mr. J. O. Martin, July 29, 1924, at **San Xavier Mission**, near Tucson, **Arizona**. Three *paratypes* taken at the same time and place by Mr. E. P. Van Duzee, in the collection of the California Academy of Sciences.

This interesting species should be placed before *Atænius abditus* Hald. where it would run in Horn's table. It differs from this by being larger, by having the pronotal punctures coarser and closer, the elytral striæ not distinctly punctured as in *abditus* but with the pronounced punctures on the flanks of the intervals. It is not closely related to any of our species, but is no doubt near *Atænius sculptifrons* Bates but differs in lacking the longitudinal rugæ of the forehead and the smooth impressed line on the pronotum.

***Atænius carolinus* Van Dyke, new species**

Small, elliptical, slightly elongate, moderately convex, black, front of head, tibiæ, and tarsi rufous, antennæ and palpi rufotestaceous. Head moderately convex; occiput rather coarsely, closely punctured; front and clypeus impunctate, subopaque, clypeal margin broadly, somewhat triangularly emarginate, an acute denticle, somewhat elevated at apex, on each side, the sides but slightly arcuate; genæ moderately prominent, obtuse. Prothorax about one-fifth broader than long, sides feebly arcuate, apex just perceptibly narrower than base, hind angles obtuse and rounded; base arcuate at middle, faintly sinuate at sides, basal margin neither crenulate nor fimbriate; disk rather coarsely, not closely punctured at middle, more densely and closely at sides, the punctures finer anteriorly. Elytra elongate oval, one-third longer than broad, the base as wide as base of prothorax; humeri indistinctly dentate, sides slightly arcuate; disk deeply striate, the striæ distinctly crenulately punctured, intervals convex, slightly flattened near suture. Mesosternum opaque, densely and finely punctured, a slight carina between the coxæ. Metasternum coarsely, not closely punctured. Abdomen feebly shining, impunctate except along anterior border where it is punctate-crenate. Anterior tibiæ acutely tridentate externally, slightly crenate above. Posterior femora smooth, the posterior marginal line evident near knee, vague at middle; tibiæ with accessory spinule a mere dentation; first tarsal segment about equal to the long spur. Length, 2.75 mm.; breadth, 1.50 mm.

Holotype (No. 2549, Mus. Calif. Acad. Sci.), and one *paratype* collected by myself in the **Black Mountains of North Carolina**, June 1901.

This very small species somewhat suggests a diminutive

A. cylindricus Horn, but lacks the close pronotal punctuation and complete marginal line to posterior femora. Being without a well-defined accessory spinule to hind tibiæ and without a deep and complete marginal line to the posterior femora, it would come near *abditus* Hald. in Horn's table of species. It might best fit in just before *desertus* Horn.

***Atænius semipilosus* Van Dyke, new species**

Slightly elongate, elliptical, moderately convex, dark rufous, legs lighter, antennæ and palpi rufotestaceous. Head moderately convex, occiput rather finely, sparsely punctured; front smooth, sides of clypeus obscurely rugose, clypeal margin broadly emarginate, obtusely, not sharply arcuate; genæ moderately prominent, obtuse. Prothorax less than one-third broader than long, slightly narrowed in front; sides moderately arcuate, hind angles obtuse and rounded; base evenly arcuate, basal marginal line distinct, lateral and basal margin finely fimbriate, not crenulate; disk coarsely, not closely punctured, finer in front. Elytra elongate oval, three-sevenths longer than broad; base slightly narrowed and narrower than base of prothorax, humeri inconspicuously dentate; sides moderately arcuate; disk deeply striate, the striæ finely, not closely punctured, intervals very convex and with a series of fine but distinct punctures on each side, close to the striæ, from which arise rather short and fine erect setæ, less evident near base (probably abraded). Mesosternum opaque, densely and finely punctured, a slight carina between the coxæ. Metasternum coarsely and sparsely punctured, more shallowly laterally. Abdomen coarsely and sparsely punctured, punctures finer at middle. Anterior tibiæ acutely tridentate externally, obscurely crenate above. Posterior femora smooth, the posterior marginal line absent; tibiæ with distinct accessory spinule; first tarsal segment as long as the following four segments but slightly shorter than the long spur. Length, 3.25 mm.; breadth, 1.15 mm.

Holotype (No. 2550, Mus. Calif. Acad. Sci.), a single specimen, collected by Prof. W. M. Wheeler at **Texas Pass, Dragon Mountains, Arizona**, July 19, 1917, and kindly presented to me. A second specimen, somewhat injured, collected by Mr. C. T. Dodds at Los Mochis, Sinaloa, Mexico, June 1922, is in the California Academy collection. This latter I will designate as a paratype.

This species superficially looks much like *Atænius desertus* Horn, and the second specimen was mixed with a series of these. The single type of pronotal punctuation and the presence of a distinct accessory spinule will, however, readily separate this from *desertus*. Structurally, this species is very close to

Atænius hirsutus Horn, but it differs by being smaller, rufous not piceous, by having the sides of the clypeal emargination angulate not rounded, the pronotal punctuation not of the double type, and the elytra less densely pilose. In Horn's table it would come perhaps best, just before *læviventris* Horn.

ACOMA Casey

This genus⁵ was established by Colonel Casey for the reception of a single species, *brunnea* Casey, and the characterization was, therefore, limited by this species. In the collection of the California Academy of Sciences there are two other species which are undoubtedly congeneric with *brunnea* but which differ in several features such as the clypeus and antennæ. Inasmuch as these structures were used in the generic description, this will now have to be somewhat modified. All of the specimens of *Acoma* which I have seen, and I have seen many *brunnea*, are males, and most of these have been taken at light. From this I am inclined to believe that the females are either wingless or are very limited in their activities as is the case with *Pleocoma*, near which they are now rightfully placed. The finding of two other species of *Acoma* in Lower California also throws some light on their distribution and seems to indicate that this genus and probably also *Pleocoma* came from the south and that we will have to look to either Central or South America, probably the west coast, for the more generalized relatives of these.

Synoptic Key

1. Antennal club of male formed of five lamellæ; clypeus very broadly margined and reflexed, rufopiceous; length 8-10 mm.
.....*robusta* sp. nov.
- , Antennal club of male formed of but three lamellæ; clypeus but moderately margined and reflexed..... 2
2. Prothorax with sides almost parallel posteriorly, gradually convergent forward; elytral striæ not sharply defined, rufopiceous; length 6-6.5 mm.....*confusa* sp. nov.
- , Prothorax with sides broadly, somewhat angulately arcuate, broadest at middle; elytral striæ always more or less distinctly defined, rufocastaneous; length 5.5-7 mm.....
.....*brunnea* Casey

Acoma robusta Van Dyke, new species

Large, robust, elongate, the sides nearly parallel, quite convex, shining; front and side margins of prothorax, elytra, legs, and under-

⁵ Anns. N. Y. Acad. Sci. V (February 1890), p. 165.

side clothed with rather long fulvous hair, the body rufopiceous. Head with occiput smooth; front rugose and opaque above, punctate-rugose in front and slightly concave; clypeus with a very broad and reflexed margin extending back to eyes, the anterior edge slightly emarginate, the sides oblique and almost straight, parallel in front of eyes; antennæ with the club formed of five long lamellæ. Prothorax three-fourths as long as broad, broadest at middle, apex deeply emarginate, front angles prominently projecting and subacute; sides sinuate just behind anterior angles, thence arcuate to base which is two-sevenths broader than apex and moderately arcuate, hind angles obtusely rounded; base finely margined, apex more broadly so; disk rather coarsely, somewhat closely punctured, a smooth longitudinal area at middle and an inconspicuous callosity near middle of sides. Scutellum impunctate except in front where vaguely punctured. Elytra one-fourth longer than broad, just perceptibly widest at middle, moderately narrowed posteriorly; humeri slightly prominent and well rounded; disk with striæ distinctly impressed, fairly well defined above, interrupted and less distinctly defined at sides, irregularly punctured, the striæ slightly convex, third and fifth somewhat narrower, smoother and more elevated, the others broader, flatter and irregularly coarsely punctured; the rather long, semirecumbent hairs arising from both stria and interstria punctures. Beneath rather coarsely, closely punctured at sides, smoother and more finely and sparsely punctured at middle and clothed with long silky hair. Length, 10 mm.; breadth, 4.5 mm.

Holotype (No. 2551, Mus. Calif. Acad. Sci.), collected by Prof. G. F. Ferris at Triunfo, Dist. Sur., Lower California, July 8, 1919, and four *paratypes* taken by Mr. J. R. Slevin at La Paz, Lower California, June 28, 1919.

This large and robust species is easily distinguished from *brunnea* not only by its greater size, but by its more pronounced convexity, piceous brown color, antennæ with five segmented club, and coarser punctuation of upper surface.

Acoma confusa Van Dyke, new species

Rather small, slightly elongate, subparallel, moderately convex, shining; front and sides of prothorax, elytra, legs and underside clothed with moderately long grayish pile, the body rufopiceous. Head with occiput (generally concealed) smooth; front rugose and opaque, flattened; clypeus concave at base, with a moderately broad and reflexed margin, the apical margin acutely (holotype) or moderately (paratype) emarginate, the sides oblique and but slightly arcuate to eyes; antennæ with the club formed of three long lamellæ. Prothorax one-third broader than long; apex moderately emarginate; front angles moderately prominent, hardly projecting forward and subacute; sides almost straight and obliquely diverging from front

angles to middle, quite parallel behind; base one-third broader than apex and moderately arcuate, hind angles obtusely rounded; base and apex finely margined; disk distinctly and rather finely, not closely punctured; a smooth longitudinal area at middle, with a finely impressed line at basal two-thirds and an inconspicuous callosity near middle of sides. Scutellum impunctate and slightly sulcate. Elytra two-sevenths longer than broad, widest at middle, gradually narrowed posteriorly; humeri slightly prominent and rounded; disk with striæ not distinctly defined, the strial and interstrial punctures rather coarse, close, and somewhat irregularly scattered, the surface also somewhat rugose, with moderately long semi-erect hairs arising from each puncture. Beneath rather coarsely, closely punctured and clothed with rather long cinereous hair. Length, 6 mm.; breadth, 2.5 mm.

Holotype (No. 2552, Mus. Calif. Acad. Sci.), collected by Mr. E. P. Van Duzee at Coronados Island, Gulf of California, May 18, 1921. One *paratype* (somewhat crushed) collected by Mr. I. M. Johnston at Loreto, Lower California, May 20, 1921.

This small species is about the size of one of the smaller *brunnea*, and has the same three-segmented antennal club, though the lamellæ composing it are but two-thirds the length of those in *brunnea*. It also differs by having the clypeus more narrowed in front, the prothorax more narrowed, with sides not rather evenly arcuate, the discal punctuation coarser and slightly more numerous, the elytra less regularly sculptured, and the color, as in the preceding species, a reddish brown, not rufocastaneous. The name *brunnea* is rather unfortunate, for the species which bears it is the only species of the three which is not truly brown.

AMPHICOMA Latr.

Field observations continued for a long series of years, seems to prove that we have but four good species of *Amphicoma* in this country: *lupina* (Lec.) and *vulpina* Hentz., the two eastern species; and *ursina* (Lec.) and *rathvoni* (Lec.), the two Pacific species. The two eastern species seem to be fairly stable as to color, but our two Pacific species are decidedly unstable, both being dichromatic as well as variable otherwise. The well-known *ursina* (Lec.) of the San Francisco sand dunes is usually a yellowish gray, but every now and then an absolutely black phase is to be found, flying and mating with the others. The other species, which is generally to be found about the sandy margins of lakes and streams, is normally dichromatic,

the black and lighter phases being found in about equal numbers. In middle California as in Napa and Sonoma counties, the true *rathvoni* (Lec.) is generally, I might say always, associated with typical *canina* (Horn). In the Sierras and in southern California, the subspecies *edwardsi* (Horn) replaces *rathvoni*, but as in the north, is associated there with *canina*. *Cooperi* (Horn) is more of a subspecies than a color phase, for it as a rule replaces *canina* in certain localities. I might also state that the black phases, *rathvoni* and *edwardsi*, as well as the light phases, *canina* and *cooperi*, may be of either sex. They also all vary considerably as to minor details of coloration in different regions.

Glaresis clypeata Van Dyke, new species

Moderately robust, somewhat elongate and subparallel, reddish brown. Head convex, front obscurely tuberculate, not impressed; clypeus with anterior margin truncate and distinctly serrate, the sides projecting obliquely outward, and obliquely truncate and serrate at apex, the galæ prominent, lobed and with margins indistinctly crenulate; the mandibles not sinuate externally. Prothorax about a fourth broader than long, sides almost straight and slightly converging forward to rounded front angles, lateral margin crenulate; disk with apical marginal groove wanting, median groove present though faint, no other discal impressions, the linear, granular tubercles numerous and distinct though minute. Elytra with striæ broad and distinctly though shallowly impressed and coarsely, rather closely punctured, the intervals well elevated, subcostiform and with the usual line of short, suberect setæ. Outer apical angle of middle tibiæ prominent and acute; outer margin of hind tibiæ but slightly emarginate before the apex. Length, 4.75 mm.; breadth, 2.25 mm.

Holotype (No. 2553, Mus. Calif. Acad. Sci.), a unique, collected by myself at Carrville, Trinity County, California, June 7, 1913.

This very distinct species would run in Fall's synoptic table⁶ of *Glaresis*, to *phaenicis* Fall. It is, however, much larger than *phaenicis*, as large as *ecostata* Fall, has the elytral striæ more distinctly punctured, the clypeus with a well-marked serrate margin, simple in the other, and the mandibles not toothed externally. I find the small spine of the hind trochanter as mentioned by Fall, but no spiniform teeth near the middle of the posterior-superior margin of the hind femora.

⁶ Psyche 14 (1907), p. 25.

TWO NEW SPECIES OF CÆLOCNEMIS
(COLEOPTERA: TENBRIONIDÆ)

BY FRANK E. BLAISDELL, SR.

The two new species described below are unique additions to our list of species of *Cælocnemis*. They are quite different from any form described by Colonel Casey in his recent revision, published in the Memoirs on the Coleoptera, XI, 1924.

Cælocnemis barretti Blaisdell, new species

Form robust, resembling *Eleodes consobrina* Lec., a little more than twice as long as wide. Color black, dull and opaque in luster. Golden pubescence of the tibiæ and tarsi as usual.

Head about as long as wide, equal to the pronotal apex; sides arcuate before the eyes, thence straight and moderately convergent to the clypeal apex, the latter sinuato-truncate, angles rather narrowly rounded. Front flat, somewhat irregularly impressed, suture more or less evident; rather finely, quite densely punctate, punctures small, more widely separated in the central area. Antennæ as long as the pronotum; feebly incrassate, seventh joint triangular, 8 to 11 transverse.

Pronotum about one-fifth wider than long, apex sinuato-truncate in moderate circular arc; sides obtusely angulate at about basal third, thence very feebly arcuate and convergent to the obtusely rounded apical angles, posteriorly convergent and broadly, feebly sinuate, becoming very briefly parallel before the rectangular basal angles, that are not in the least prominent; lateral marginal bead fine, thin and feebly reflexed anteriorly; base truncate in feeble circular arc; disk evenly and moderately convex, densely and quite evenly punctate; punctures small, slightly larger than those of the head.

Elytra about a half longer than wide, somewhat evenly but not strongly inflated, widest at about the middle, base transverse, about equal to the pronotal base; scutellum very small and triangular; humeri obtuse; sides broadly and rather evenly arcuate, obtusely rounded at apex; disk quite evenly convex, rapidly and arcuately declivous apically, feebly flattened in the central area; surface ruguloso-punctate, striæ of rather widely spaced punctures which are more or less distinct and larger than the interstitial punctures.

Legs rather short, somewhat slender; anterior femora stouter than the others; hind femora straight and three-eighths longer than the tarsi.

Abdomen somewhat shining, smooth and more or less distinctly ruguloso-punctate.

The sexes are quite similar in form: Male has the abdomen slightly oblique to the sternal plane and noticeably flattened in the central area of the first three segments. In the female the abdomen is horizontal and more convex.

Measurements. (Types.) Length 18.5 to 19.4 mm.; width 8 mm. Five specimens studied. Largest specimen a female, length 22 mm.; width 9.5 mm.

Holotype, female, No. 2554, and *allotype*, male, No. 2555, deposited in the collection of the California Academy of Sciences. Mr. Barrett retains three *paratypes* in his collection.

Type locality, **Bear Canyon**, Sierra Madre Mountains, **Los Angeles County, California**, collected on December 31, 1926, by Mr. Ralph Barrett, to whom the species is dedicated in recognition of his keenness in collecting.

Barretti differs from all of the other species by its short robust form and peculiar dull luster. In larger specimens there seems to be a tendency to become more elongate, as shown in the large female mentioned above. The species possesses a marked resemblance to *Eleodes consobrina*, which occurs in the same geographical region. A homologous type occurs in northern California in the vicinity of Shasta City; it is much less robust, more depressed and shining and of a different species.

Cælocnemis tanneri Blaisdell, new species

Form elongate oval, about two and two-thirds as long as wide, not in the least robust, rather strongly convex. Color dull black throughout.

Head three-fourths as wide as the pronotum, widest across the preocular arcuation; sides of the front straight and moderately convergent to the epistomal apex, the latter subtruncate, angles obtuse and rather narrowly rounded; front vaguely and broadly impressed along the frontal suture and internally before the eyes; surface obsoletely, minutely, evenly and moderately closely punctate. Antennæ moderate in length, about attaining the pronotal base, slender, slightly and very gradually incrassate in the distal five joints, the latter slightly compressed, last four slightly transverse; eleventh largest, fifth and sixth subequal in length and together as long as the third, second small and annular, third to the sixth inclusive quite cylindrical, the fourth distinctly longer than the fifth.

Pronotum about as wide as long, widest just before the middle; apex truncate in circular arc; sides moderately arcuate anteriorly, oblique and convergent to base, feebly and broadly sinuate before the basal angles, the latter small and subrectangular, marginal bead fine and not distinctly marked; apical angles rather broadly rounded; base transverse, more strongly beaded; disk evenly and rather strongly convex, arcuately declivous at the angles, most so anteriorly, finely, rather closely and somewhat distinctly punctate, punctures slightly denser laterally.

Elytra oval, about twice as long as wide, widest a little behind the middle; moderately convex on the dorsum, strongly and evenly rounded laterally, obliquely and arcuately declivous posteriorly, apex moderately narrowly rounded; disk feebly sculptured, eight striæ of small, slightly elongate punctures, which are not in the least impressed, intervals flat and very finely punctulate, surface obsoletely rugulose.

Abdomen slightly oblique to the sterna, moderately convex, broadly impressed along the middle third, finely but not densely punctato-rugulose. Fifth segment with a feeble submarginal apical groove. Legs long and quite slender, obsoletely sculptured; tibiæ fulvo-pubescent within as usual; tarsi similarly clothed beneath; meso- and metatibiæ straight, protibiæ slightly arcuate.

Measurements. Length, 16.6 mm.; width, 6 mm.

Type, a unique male, No. 2556, in the collection of the California Academy of Sciences.

Type locality, **Zion's Canyon, Utah.** Collected on June 10, 1924, by Vasco M. Tanner. I take pleasure in naming the species after its discoverer.

Tanneri belongs with those species that have the pronotal sides broadly rounded. It is distinctly different from *punctata* Lec., which also occurs in Utah according to Colonel Casey; my own series of which was collected in Nevada. In *punctata* the punctuation is distinct, the prothorax wider than long. *Utensis* Casey has the prothorax wider than long, widest behind the middle and the punctuation is strong, deep, and close-set. *Spaldingi* Casey has pronotal characters like those of *utensis*, but the basal angles are acute and everted; both occur in Provo Canyon, Utah, and there is reason to believe that they are one and the same species but no specimens are at hand to prove it. In *tanneri* the prothorax is about as long as wide, widest just before the middle and the sculpturing is quite obsolescent throughout.

℞ DICHELONYX PALLENS Lec.

According to the field observations of Mr. E. R. Leach, *Dichelonyx longiclava* Fall is but the male of *D. pallens* Lec. Not only are all *longiclava* males and all *pallens* females, but they are restricted to the same general regions, the chaparral-covered hills of middle and northern California. In one case Mr. Leach secured a pair actually in copulation.—E. C. Van Dyke.

THREE NEW SPECIES OF RHAPHIUM
(DIPTERA)

BY M. C. VAN DUZEE

*Buffalo, New York***Rhaphium obtusum** Van Duzee, new species

Male: Length, 5 mm. Face wide, its sides parallel, viewed obliquely appearing gray or whitish, seen from in front more slate-colored; front opaque with grayish brown pollen; palpi black with numerous black hairs; antennæ black, first joint with bristles above and below; third joint about twice as long as width of base, somewhat triangular; arista apical, scarcely as long as the antenna; beard white, not abundant.

Dorsum of thorax blue, posterior part and scutellum more green, the whole covered with thick gray pollen, the bristles inserted in minute black dots; scutellum with two pair of long bristles; dorsum of abdomen shining green, covered with stiff black hairs and white pollen which is more conspicuous at base of the segments; posterior part of segments more blackish on the middle. Hypopygium black; outer appendages small, black, somewhat rounded at tip, covered with pale hairs; inner appendages large, lamella-like, extending far beyond the outer lamellæ and appearing like an extension of the hypopygium when viewed from the side; central filament stout, black not reaching the tip of the inner appendages.

Coxæ and femora black, tips of fore and middle femora yellow, trochanters black; fore coxæ with black, bristly hairs on anterior surface; middle coxæ without a distinct spur, but the long stiff hairs on the front surface extend down beyond their tips, forming a small obscure spur; all femora with black bristles on the whole of their lower surface, those on middle ones longest; all tibiæ yellow, posterior very narrowly black at base and quite broadly so at tip; all tibiæ with short hair, the bristles on upper surface large, middle pair with several very minute ones below; fore and middle tarsi black from the tip of the first joint, the posterior wholly black; all tarsi plain; joints of fore tarsi as 48-11-10-7-10; of middle ones as 56-19-14-9-9; joints of posterior ones as 40-29-20-12-12. Calypters white with a black tip and yellow cilia; knobs of halteres white.

Wings a little grayish; first vein reaching halfway to tip of second; third vein only a little bent back at tip; last section of fourth vein bent at basal third, parallel with third at tip, ending in the apex of the wing; cross-vein 28, last section of fifth vein 50 fiftieths of a millimeter long.

Type, male, No. 2557, Mus. Calif. Acad. Sci., taken by E. P. Van Duzee, June 27, 1927, at Reno, Nevada; one *paratype* was taken at the same time and place.

This would run to *terminalis* in Mr. Curran's table of species

(Trans. Royal Canadian Institute, Toronto, Vol. XV, p. 253, 1926). It differs from that species in having very short outer hypopygial appendages, while in that species the outer appendages are very long and slender.

Rhaphium calcaratum Van Duzee, new species

Male: Length, 2.5 mm. Face rather wide, narrowest below, brown when seen from in front, white when viewed obliquely; antennæ black, third joint somewhat conical in outline, one and a half times as long as wide; arista twice as long as the third joint; palpi and proboscis black; front and occiput blackish; lateral and inferior orbital cilia and the beard white.

Thorax, scutellum and abdomen dark green, the latter with slight coppery reflections and short black hair on dorsum; hair on the sides long and white; the thin brownish pollen on the dorsum of the thorax leaving shining lines along the rows of bristles. Hypopygium black, nearly round; outer appendages rather long filaments that are a little bent at tip, fringed with hairs and about as long as the width of the hypopygium; inner appendages a pair of stouter filaments; straighter and stouter than the outer ones with only a few very short hairs, placed on each side of the tip of the hypopygium.

All coxæ, fore and middle femora, apical half of posterior femora and the whole of posterior tibiæ and tarsi black; basal half of hind femora and fore and middle tibiæ yellow, fore and middle tarsi black from the extreme tip of first joint; hairs on fore coxæ white; middle coxæ without a spur; first joint of fore tarsi swollen below on basal half; first joint of middle tarsi a little enlarged at tip; joints of fore tarsi as 15-8-5-5-6; of middle ones as 29-11-10-7-6; joints of posterior tarsi as 25-23-15-10-9. Calypters and halteres yellow, cilia of the former white.

Wings grayish; third and fourth veins parallel toward their tips, fourth ending in the apex of the wing; last section of fifth vein 36, cross-vein 10 fiftieths of a millimeter long.

Described from one male in the author's collection, taken at Ithaca, New York.

Rhaphium fuscicosta Van Duzee, new species

Male: Length, 5 mm. Face narrow, silvery white; front green, dulled with white pollen; palpi black with white pollen and long, flattened, silvery white hairs on apical part; proboscis black; antennæ black, width of third joint is as 11, length as 40, length of arista as 43; upper orbits with a few short black cilia, no cilia on lateral and inferior orbits; beard very short, white, a few white bristles below the head.

Thorax and scutellum green with bronze reflections, slightly dulled with white pollen. Abdomen blue-green, more blue posteriorly, base

of segments blackish; hairs on dorsum of abdomen black, on the sides long, stiff and yellowish white. Hypopygium black, outer appendages long brown filaments fringed with long hairs; inner appendages very large thin lamellæ, a little longer than the outer filaments ($\frac{1}{2}$ mm. long), about twice as long as wide, broadly rounded at apex, whitish, blackened at base.

Coxæ black, anterior pair with green reflections; fore and middle coxæ with long, dense, silvery white hair, the latter with a large black thorn at tip; fore femora, except tip, a broad ring on apical half of middle femora, most of apical half of posterior femora and the trochanters black; remainder of middle and hind femora, the whole of fore and middle tibiæ and basal three-fifths of posterior tibiæ yellow; apical two-fifths of hind tibiæ and all tarsi black, base of fore and middle tarsi slightly yellowish; fore and middle femora with long pale hairs below; posterior femora with a few long pale hairs at base above, none below; hind tibiæ thickened on apical part; middle tarsi with the second, third and fourth joints slightly widened; joints of fore tarsi as 34-10-7-6-8; of middle ones as 55-23-17-10-9; those of posterior pair as 51-20-16-10-10. Calypters yellow with black tips and white cilia; halteres pale yellow.

Wings grayish, costal margin blackish from just before the tip of first vein to tip of third vein and from the costa to third vein; apical part of wing beyond the cross-vein and back to fourth vein tinged with brown; third vein bent back at tip; last section of fourth vein bent at its middle, parallel with third at tip, reaching the wing margin just before apex of wing; last section of fifth vein 56, cross-vein 28 fiftieths of a millimeter long.

Described from one male in the author's collection, taken by him, June 16, 1924, at Little Valley, New York.

This is something like *banksi* Van Duzee, but in that species the large lamellæ are the outer appendages, in this they are the inner ones. It is still more like *insolitum* Curran, but the outer appendages in that form are much broader at base, being triangular, not filaments as in this; the beard in that species is very abundant and long, in this it is short and not very abundant.

Obtusum new species also comes in this group of four species having large hypopygial lamellæ; *fuscicosta* and *insolitum* have the basal half of hind femora yellow, apical half black; *banksi* and *obtusum* have all femora wholly black, except at tip; in *banksi* the large lamellæ are whitish tinged with brown and black at extreme tip, in *obtusum* the lamellæ are black at base, slightly testaceous or yellowish at tip, they are also of a different form.

R THREE NEW APHIDS FROM UTAH*

BY GEORGE F. KNOWLTON

*Agricultural Experiment Station**Logan, Utah***Macrosiphum packi**¹ Knowlton, n. sp.

This large, rather shiny, bluish green to apple-green aphid² is quite generally distributed over Utah, feeding upon the common rabbit brush (*Chrysothamnus nauseosus*). The colonies are usually small and located on the leaves well out toward the tips of the twigs. Most forms collected have been apterous viviparous females and nymphs, though one pupal nymph has been taken.

Stem mother. Similar to the summer apterous females but darker green and often larger, reaching a length of 3.6 mm. in some cases.

Apterous viviparous female. Size, 3 to 3.25 mm. long; rostrum reaching second coxa; head armed with elongate hairs, enlarged at the tip; ocular tubercles rudimentary or lacking; antennal tubercles rather prominent and diverging; antennal I gibbus on inner surface; antennæ black except I, II, and base of III which are green; body armed with numerous capitate to fan-like hairs; antennal III, 0.80 mm. long and armed with three to nine oval sensoria arranged in an irregular to scattered row on basal one-half to two-thirds of segment: IV, 0.8 mm.; V, 0.65 to 0.67 mm.; VI, 1.24 to 1.54 (0.14 + 1.1 to 1.4) mm.; legs rather long; lateral tubercles lacking; cornicles slender, 1.17 mm. long, without closed reticulations, usually curving slightly outward near distal end, moderately swollen before the flange which is not preceded by a constriction; cauda elongate, with four or five hairs on each side and two on dorsal surface near end.

First collected at Cove Fort, Utah, on July 7, 1925. Other collections were made at Aurora, Axtell, Fruita, Lehi, Loa, Milford, Richfield, Salina (May 7), Scipio, Sigurd, St. John, Teasdale, Tooele, and Torry, Utah.

The cotypes may be found in the collections of the United States National Museum, Utah Agricultural Experiment Station, and in the collection of the writer.

Aphis sorensoni³ Knowlton, n. sp.

The winged form of this greenish black aphid⁴ was collected

* Approved for publication by Director, June 23, 1927.

¹ Dr. H. J. Pack, Entomologist, Utah Agricultural Experiment Station.

² The writer wishes to thank Dr. C. P. Gillette and Miss M. A. Palmer for their opinions concerning this form.

³ C. J. Sorenson, Assistant Entomologist Utah Agricultural Experiment Station.

⁴ The writer wishes to thank Dr. E. M. Patch for her opinion concerning this form.

at Providence, Utah, July 18, 1925, where it was feeding upon the leaves of willow (*Salix lutea*).

Winged viviparous female. Size, 1.55 mm. long; rostrum barely reaching second coxæ; antennæ black and armed with pointed hairs; antennal III, 0.36 mm. long with twenty-five to thirty oval sensoria scattered over the segment; IV, 0.23 mm.; V, 0.2 mm.; VI, 0.46 (0.11 + 0.35) mm.; prothoracic tubercles prominent; legs of moderate length; wing venation typical, veins slightly dusky, second branch of M arising slightly nearer to margin of wing than to the first branch; abdomen bluish green with a prominent lateral tubercle on each side posterior to the cornicles; cornicles black, 0.25 mm. long, cylindrical, covered with broken reticulations and ending in a moderate flange; cauda black, constricted near base with four to five hairs on each side and one on dorsal surface near distal end.

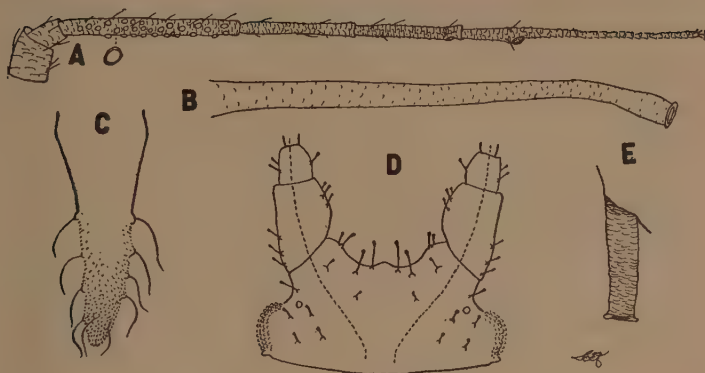
Type in the collection of the writer.

Neomyzus masoni Knowlton, n. sp.

This bluish green aphid was rather common on young sunflowers (*Helianthus annuus*) at St. George, Utah, on July 9, 1925. The aphids were present on the younger leaves and tip growth, in some cases in such numbers as to cause wilting. Many were also present on the underside of older leaves. Migration was occurring at this time, and winged forms were found on many other plants. These forms would take flight on very slight disturbance.

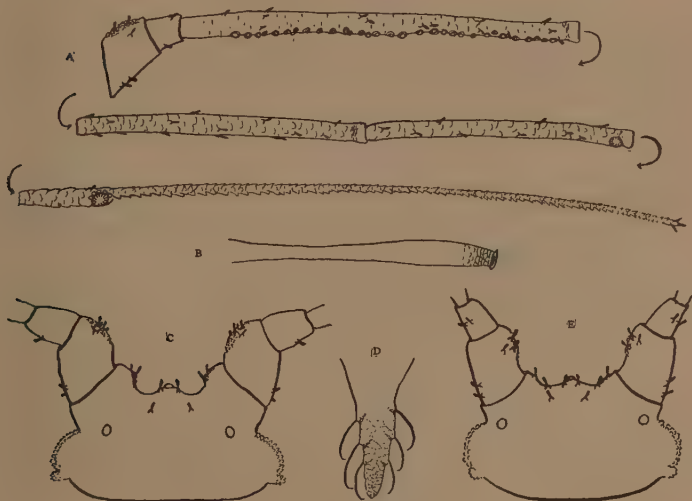
Dr. P. W. Mason called the writer's attention to the resemblance of this form to *Amphorophora corylina* (Davidson) from which it differs principally in having more slender, elongate cornicles, and the *Myzini* character of slightly gibbus inner surface of the first antennals which extends to the inner surface of the antennal tubercles of the apterous forms.

Alate vivipara. Color bluish green to yellowish green; size, 2 mm. long; rostrum reaching second coxa, blackish at tip; head and antennæ armed with short finger-like hairs often enlarged toward tip; antennal tubercles prominent; antennal segments I, II, and base of III greenish, rest blackish to black; antennal I slightly gibbus on inner side; III, 0.71 to 0.78 mm. long with twenty-five to thirty sensoria in irregular row; IV, 0.51 to 0.56 mm.; V, 0.55 to 0.57 mm.; VI, 1.42 (0.17 + 1.25) mm.; legs rather long; wing venation typical with brownish black veins and second branch of media arising slightly nearer margin of wing than to first branch of media, and with a long narrow stigma; cornicles 0.70 to 0.75 mm. long, attachment greenish black, blacker at tip where there are a few rows of



Explanation of Figure 1

A, *Aphis sorenseni* n. sp., antenna of alate viviparous; B, *Macrosiphum packi* n. sp., cornicle of apterous viviparous; C, *M. packi* cauda of apterous viviparous; D, *M. packi*, head of apterous viviparous; E, *A. sorenseni*, cornicle of alate viviparous.



Explanation of Figure 2

Neomyzus masoni n. sp. A, antenna of alate viviparous; B, cornicle of alate viviparous; C, head of apterous viviparous; D, cauda of alate viviparous; E, head of alate viviparous.

closed reticulations before the flange; cauda elongate, cone-shaped, constriction near base very slight to lacking.

Apterous vivipara. Color bluish green to pale green; body 2.12 mm. long; antennal tubercles and first antennal slightly gibbus on inner surface; antennæ blackish to black; antennal III, 0.8 mm. long with five to eight sensoria in a row on basal half; IV, 0.55 mm.; V, 0.52 mm.; VI, 1.26 (0.15 + 1.1) mm.; legs rather long; cornicles 0.75 mm. long, slightly swollen on distal half, blackish at tip, with three or four rows of closed reticulations; cauda long, conical, usually very slightly constricted near base.

In Utah this aphid has also been collected at Garden City, June 23; Holden, July 7; and Hurricane, July 11, all during 1925. Only at St George was it found in such numbers as to affect the plant noticeably.

Cotypes in the United States National Museum and in the collection of the writer.

♀ *CALLIDIUM PALLIDUM* Van Dyke

Since this species was described (Pan-Pacif. Entom., Vol. 4, p. 111, 1928), from two male individuals, a series of eleven specimens consisting of four males and seven females belonging to Mr. H. C. Cain, has been submitted to me by Mr. Gorton Linsley. All of these were reared by Mr. Cain from branches of the redwood, *Sequoia sempervirens* Endl., taken at La Honda, San Mateo County, California, and emerged, indoors, about January 1, 1923. The males are exactly like the specimens previously studied, robust and rufotestaceous. The females are, however, entirely different, not especially robust and of a dark violet color, superficially resembling *antennatum* Newm. The species is thus shown to be the most remarkably dichromatic as well as dimorphic one that I know of among the Callidini. The distinctive features of the female when compared with the females of other blue or violet species, are: the brown pile of the forebody, the narrow prothorax, hardly more than three-fifths as broad as elytra and the very long elytra, an average of 12 mm. as compared with a total length of 16 mm. *Callidium sequoiarium* Fisch., described from the giant sequoia but also found on the coast redwood, is not only sexually unicolorous, but more greenish, more shining, with a proportionally broader prothorax and shorter elytra.—Edwin C. Van Dyke.

A NEW SPECIES OF MELANDRYIDÆ
(COLEOPTERA)

BY RALPH E. BARRETT

University of California, Berkeley, California

***Microscapha californica* Barrett, new species**

Body oval, strongly convex, castaneous. Head deflexed, slightly constricted behind eyes; eyes very coarsely granulate, widely separated on the front, slightly emarginate in front and not prolonged over the insertion of the antennæ; maxillary palpi large, four-segmented, last segment strongly dilated and obliquely truncate at tip, longer than wide; antenna eleven-segmented, first two segments equal in length to segments three to seven inclusive, last four segments dilated forming a well-developed club, first two segments thicker than third. Prothorax twice as wide as long, as wide behind as base of elytra, a slight though distinct margin at sides, base sinuate each side; finely, moderately, closely and irregularly punctate. Scutellum invisible. Elytra convex, sides narrowly inflexed, non-striated, finely, moderately, closely and irregularly punctate, with a single seta arising in each puncture. Abdomen with five ventral segments, basal segment subequal to second at middle. Legs moderately robust; anterior coxæ narrowly separated, large and almost oval; middle coxæ small, moderately separated, with the mesosternum between the coxæ cordiform; hind coxæ small and narrowly separated; hind tibia with two spines on distal end one-half to two-thirds as long as first tarsal segment, serrate on under margin, outer spine slightly longer than inner; tarsi 5-5-4, pubescent, first segment of middle tarsi at least as long as the next two combined, first segment hind tarsi as long as the tibia; tarsal claws simple. Length, 2.5 to 3.5 mm.; breadth, 1.25 to 2 mm.

Holotype (No. 2558, Mus. Calif. Acad. Sci.), and ten paratypes taken by myself from nests of the wood rat, *Neotoma fuscipes* Baird, near Pasadena, California, January 1, 1928. A pair of paratypes will also be deposited in the collection of the California Academy of Sciences.

This is a very distinct species and resembles *Microscapha clavicornis* Lec. by having the base of the prothorax sinuate each side of the middle and the last segment of the maxillary palpi oval, obliquely truncate at apex and longer than wide; and *Lederia arctica* (Horn) by color, invisible scutellum and very coarse granular eyes. It is therefore intermediate between the two genera and as these are the characters used for the separation of the two genera *Microscapha* Lec.¹ and *Crioscapha*

¹ Smiths. Misc. Coll., Vol. 6, No. 167, 2nd. ed. 1866, p. 152.

(Horn),² the latter later found to be a synonym of *Lederia* Reitt., I am suppressing the latter and placing the three known American species in the former genus. In Junk's *Coleopterorum Catalogus*³ four other species of *Microscapha* are given while seven species of *Lederia* are listed. I cannot give the status of the South American and Old World species, but as for the species found in the United States *M. californica* definitely unites them into a homogeneous group.

M. californica also differs from *M. clavicornis* in being castaneous throughout, the latter being black with reddish abdomen, and from *M. arctica* by being in general slightly larger.

Key to the known species of American *Microscapha* Lec.

1. Scutellum visible, base of prothorax sinuate each side; mesosternum between the coxæ narrow; last segment of maxillary palpi oval, obliquely truncate, longer than wide, eyes moderately coarsely granulate.....*clavicornis* Lec.
Scutellum invisible 2
2. Base of prothorax sinuate each side; mesosternum between the coxæ cordiform; last segment of maxillary palpi oval, obliquely truncate, longer than wide; eyes very coarsely granulate.....*californica* n. sp.
Base of prothorax regularly arcuate; mesosternum between the coxæ cordiform; last segment of maxillary palpi oval, squarely truncate, about as wide as long; eyes very coarsely granulate*arctica* Horn

THYCE SQUAMICOLLIS Lec.

Within the last few years there have been taken in the Coachella Valley of California quite a number of what I consider to be but a large phase of *Thyce squamicollis* Lec. They differ in the main from typical specimens from New Mexico, by being larger, often with the first or upper tooth of the front tibiæ not compressed, and by having a very minute secondary punctuation between the normal punctures of pronotum, elytra and abdomen, rarely evident in the other. So far, this species has not been taken in Arizona but no doubt will be. It has been considered the outlying member of one of our typical Pacific Coast genera and the finding of the California specimens of this species binds the straggler still closer to the parent stock.—E. C. Van Dyke.

² Trans. Am. Ent. Soc., Vol. 26, 1893, p. 144.

³ *Coleopterorum Catalogus*, W. Junk, Part 77 by E. Csiki, 1924, p. 20.

THE SPECIES OF SINODENDRON (LUCANIDÆ)

BY MELVILLE H. HATCH*

Sinodendron is one of those genera that seem to unite the Pacific coast of North America more closely with the Palæ-arctic region than with other portions of North America. The three species of this genus are known respectively from Europe, the North American Pacific Coast, and Azerbaijan and Trans-Caspia. The larvæ inhabit the decaying wood of the dead and dying trunks, stumps, and logs of various deciduous trees (alder, beech, ash, willow, etc.), but do not appear to injure the living tree.

In the following key the characters of *persicum* are drawn from the original description.

A.¹ Elytral intervals coarsely punctate; ♂ with transverse pronotal ridge emarginate on either side of median lobe.

B.¹ Elytral intervals less coarsely punctate. Male: cephalic horn feebly constricted at base; pronotum less coarsely punctate, with large lateral areas caudad to the transverse ridge and the middle line impunctate; lateral protuberances of transverse pronotal ridge less prominent but about equal in width to the median lobe; transverse ridge terminating at anterior angles of pronotum, the sides of the pronotum in front feebly convergent with an evident longitudinal impression. Female: pronotum with conspicuous raised impunctate transverse and longitudinal areas. Europe and adjacent portions of Asia, Caucasus. (*americanum* Beauv., *juvenile* Muls.)
.....*cylindricum* L.

B.² Elytral intervals less coarsely punctate. Male: cephalic horn not constricted at base, gradually narrowed from base to apex; pronotum more coarsely punctate, without evidence of impunctate areas in front of transverse ridge and only feebly developed impunctate areas behind the ridge; lateral protuberances of transverse ridge minute; transverse ridge terminating at the side margin of the pronotum well behind apex, the sides of the pronotum in front strongly convergent with a feeble impression behind the ridge. Female: pronotum without transverse impunctate spaces. California to Washington.....
.....*rugosum* Mann.

A.² Elytral intervals broad, almost impunctate except at apex. Male: transverse pronotal ridge not emarginate on either

* Contribution from the Zoölogical Laboratory of the University of Washington.

side of base of median lobe; cephalic horn strongly constricted at base; pronotum without impunctate area in front of transverse ridge, behind the ridge an extensive impunctate area attaining the sides but not the base, the sides without impressed area. Female: pronotum with transverse impunctate areas. Azerbaijan (Talysh) and Trans-Caspia (Kopeh Dagh).....*persicum* Reitt.

MELLISSODES MYSOPS COCKERELL NESTING IN OREGON (ANTHOPHORIDÆ, HYM.)

BY H. A. SCULLEN

Oregon State Agricultural College

On July 2, 1926, the writer found a colony of *Melissodes mysops* Kll. nesting in the side of a sand bank at the top of a sea cliff in the Coos Bay region on the Oregon coast. The colony was about fifty feet above the high-water mark on the Cape Argo Lighthouse grounds. It consisted of about sixty individual nests scattered for a distance of about twenty feet along the top of the cliff. Numerous females were seen busily carrying in pollen, while several males were hovering about the openings. Both males and females were taken from nearby thistles (*Cirsium* sp.). Two nests opened showed a collection of pollen, but no evidence of eggs.

On July 13, the colony was again visited. On opening nests half-grown larvæ were found in some, while in others eggs were still present. The nests were visited a third time on July 21. Several larvæ appeared full grown. Very few females were seen. No males were in evidence. A few females were still carrying pollen. Specimens were also taken several miles farther south on the beach cliffs.

As far as the writer has been able to determine, this is the first record of this species for Oregon, and also of its nesting habitat.

Specimens taken were determined by Miss Grace Sandhouse, of the National Museum.

NOTE

The numbers of Volume IV of the *Pan-Pacific Entomologist* were mailed on the following dates: No. 1 on September 16, 1927; No. 2 on December 3, 1927; No. 3 on March 15, 1928, and No. 4 on June 26, 1928.

OBSERVATIONS ON THE CONTROL OF SIERRAN
AÆDES (CULICIDÆ: DIPTERA)

BY STANLEY B. FREEBORN

University of California, Davis, California

Vacationing in the Sierra of California is marred by only one feature of Nature's sense of fitness—the biting flies. Tabanids and biting rhagionids (leptids) are particularly pestiferous, but the crown of thorns is in the possession of the mosquitoes which are almost universal above the 5000-foot line.

These day biting mosquitoes are all members of the genus *Aedes*, the most troublesome ones being *communis tahoensis*, *ventrovittis*, and *hexodontus*. They are known as snow mosquitoes on account of the fact that they breed in pools caused by melting snow. While this is literally true many of them find their optimum breeding places in lakeside or streamside pools that are flooded as a result of rising water only indirectly connected with the melting snow. Others, true to their name, breed at the edge of the snow fields in depressions that hold the water as it trickles from an adjacent snow bank.

All of them, irrespective of their breeding places, emerge from eggs that have been laid the previous summer and remained dormant through the fall and winter. The advent of moisture in the spring is a signal for hatching, the promptness with which this is heeded depending to some extent on the species involved.

The adult after feeding seeks the muddy banks of a favorable breeding pool and oviposits. The eggs are evidently laid over a period of two or three weeks in small numbers, eight to ten eggs at a time. The writer has seen *Aedes communis tahoensis* females ovipositing on a bone-dry mass of mud-stained leaves and twigs that had been dry for over a month. Previous observation had shown it to be a bed of a shallow pool, however, and the next year's observation proved this to be the case again.

Observations and attempts at control have been made during the past two years at upper Echo Lake in El Dorado County, California, at an elevation of 7500 feet. The prevailing mosquito here is *Aedes hexodontus*, a mosquito which prefers relatively deep, semipermanent overflow or seepage pools but which adapts itself to varying conditions and matures equally well in

shallow depressions or even hoof-prints. Its larvæ are easily recognizable in the Sierra as the only ones with the chitinous anal saddle completely surrounding the segment. The adult female is not easily differentiated from its ally, *Aedes communis tahoensis*, the most constant differentiation being the yellow lateral aspect of the mesonotum which is grayish in *communis tahoensis*.

At the western end of the lake there is a moon-shaped area known as Area A, extending back from the shore line for approximately one hundred yards at the center. This whole area is scarcely a foot higher than the high water mark of the lake. The vegetation is a tangled mass of shrubs, and even the slightest depressions hold an appreciable amount of water when the lake is high. Behind this area there arises a granite cliff some twenty to thirty feet high which forms the shoreward boundary of another bench of about equal extent covered with a sparse growth of willows which has sprung up following the burning off of the original pine stand. A meandering stream and poor natural drainage caused by the outcropping of the granite cliff join to form many pools. This will be known as Area B.

Behind this bench the land rises precipitously up the face of another cliff approximately sixty feet in height to flatten out above into a flat valley traversed by a snow stream through a primeval pine forest with tangled bushes immediately bordering the stream. The fall of the stream on this uppermost bench is gentle and there is considerable meandering across the floor of the valley which averages from sixty to seventy-five yards in width. This is known as Area C.

In 1926, Areas A and B were sprayed on May 23 with fuel oil designated as 27°. Spraying was at first limited to those pools showing larvæ, but was finally applied to all pools of standing water in the areas mentioned. No attempt to cover Area C was made. At this time snow was present in small patches at the shore of the lake in sheltered spots, but the majority of the land was bare. Larvæ and pupæ were numerous, but no adults were noticed. A week later, on May 30, the oiled areas were inspected and all larvæ and pupæ were found to be dead. A few adult mosquitoes were present. At the next visit,

on June 11, adult mosquitoes were present in hordes. Attempts to remain out-of-doors unprotected by repellents or nets at sunrise or sunset resulted in torture, and even at midday a stop in the shade resulted in the attack of swarms of vicious biters.

An inspection of the sprayed areas showed no breeding, but the pools of Area C and its extension into the Desolation Valley area showed nearly every pool teeming with pure cultures of *A. hexodontus* larvæ, pupæ, and cast pupal skins. A heavy rain on the 9th of July "retired the side," and the mosquito problem was over for 1926.

In 1927 it was decided to extend our control operations approximately one-half mile into Area C to determine if nearly absolute control for this distance would protect the lake shore. The snowfall was much heavier, and on May 30 no bare ground was visible. On June 20 another trip was made. By this time the snow was in patches but still more plentiful than on May 23 in 1926. Numerous pools were present, and an inspection of these showed some very interesting results. Larvæ were present in large numbers in Area C, which had not been sprayed in 1926, but in Areas A and B no larvæ were present in the pools that had been teeming with immature forms before spraying in 1926. The pools of this area were carefully observed throughout the season and no breeding occurred in any pool that had been sprayed in 1926. In the same areas, however, were a few pools that had been merely soggy areas in 1926 without standing water, but owing to increased snowfall had become pools in 1927. These harbored larvæ, but no pool that had received oil the previous year was found to be infested with mosquito life.

We followed out our program of spraying extending back about a half mile into Area C as planned. Very few adult mosquitoes appeared until July 6 and 7 when they appeared on the lake shore in numbers although not as abundantly as in 1926. Inspection of the area behind the sprayed portion of Area C showed many larvæ of *A. hexodontus* with a scattering of *A. communis tahoensis* in some of the deep pools. The latter were seen in numbers in Desolation Valley some three miles west of the area in question. This species made its appearance among the *hexodontus* adults at Echo Lake during the latter

part of July, but its late appearance was probably caused by its delayed hatching and emergence at its more elevated breeding grounds rather than by the time required to travel the distance involved.

Two resulting observations of the trials are in the one case discouraging and on the other hand encouraging in our attempts to control mountain mosquitoes. The migration of *communis tahoensis* adults from their nearest breeding grounds was over a mile, with little indication that an even greater protected area would be more effective. This information, which has always been surmised, presents a discouraging outlook to the summer homesite or resort owner, who anticipates the possibility of being able to control his mosquito problem. It was noted in the course of the work, however, that the migration of the mosquitoes followed the courses of the streams and the denser vegetation. Homesite lots a few hundred yards from stream beds and cleared of vegetation were often comparatively free from mosquitoes, while areas within a few hundred yards that included water courses and their attendant vegetation were deluged with the pests.

The encouraging feature of the work was the nonappearance in 1927 of larvæ in pools sprayed in 1926. This cannot be explained in any way except that the oil which was noted to stay on the pools for from two to three weeks in noticeable amounts, either repelled ovipositing adults or destroyed them or their eggs at the time of oviposition. This factor was checked in 1927. It was noticeable that the number of hovering adults about the sprayed pools was less than with similar untreated pools which would lend belief to the repellent theory, but it was also true that large numbers of female mosquitoes were found dead on the surface of oiled pools. Possibly the oil repelled the majority and killed the minority that attempted to land on the surface.

On account of the generally discouraging trend of this note it may be fitting to add the results of trials with repellents. During the course of the work we had adequate opportunity to compare the efficiency of various oils and salves as mosquito repellents. The choice was narrowed to the two following:

Bamber oil, which is used in the Orient and is quite effective against anophelines, gave considerable temporary relief. It is a clear yellow liquid and particularly good for allaying the itching from bites already inflicted. Its formula is as follows:

Citronella.....	1½ parts
Kerosene.....	1 part
Cocoanut oil.....	2 parts
Carbolic acid.....	1 per cent

More lasting and more effective was a combination that we have named Sierra Oil. It is a mixture, most of the ingredients of which are used in a preparation called Maine Oil. It has a dark brown color in bulk, but applied to the skin it causes very little, if any, discoloration. One application is effective for approximately one-half hour even in a heavy infestation. Its formula is as follows:

Oil of citronella.....	3 ounces
Spirits of camphor.....	1 ounce
Oil of tar.....	1 ounce
Oil of pennyroyal.....	¼ ounce
Castor oil.....	4 ounces

NEW HOST NOTE FOR PHYMATODES VULNERATUS LEC.

In December 1925, I found in a vacant lot near my home in Oakland, California, a discarded pile of apple branches containing larvæ of cerambycid and buprestid borers. Upon emergence in April and May 1926, the cerambycids proved to be *Phymatodes vulneratus* Lec. According to E. C. Van Dyke and others, the normal host for this species is the broad-leaved maple (*Acer macrophyllum*). Therefore, being interested in this new host, I placed adults of both sexes in a cage containing freshly cut apple branches and found that the females would oviposit on them. However, when placed in a cage containing both apple and broad-leaved maple, only the maple was used, tending to prove that the maple is the preferred host. The adults emerged from both the apple and maple at about the same time, during April and May 1927, showing, as has been recorded before, that their life cycle is one year.—Gorton Linsley.

A MISIDENTIFIED HADRONEMA (HEMIPTERA)

BY E. P. VAN DUZEE

California Academy of Sciences, San Francisco

Our most strongly marked species of *Hadronema* has long stood in my collection, and probably in others, as *robusta* Uhler. The type of that species, from the cape region of Lower California, however, proves to be a *Lopidea* very near to the Texan *wileyæ* Knight, but with the expanded base of the dextral clasper less angulate. The misidentified species may be described as follows:

***Hadronema uhleri* Van Duzee, n. sp.**

Black; pronotum, scutellum, femora and pleuræ bright red. Length, 4-5 mm.

Male. Head with eyes three-fourths as wide as pronotal base; vertex full but hardly tumid, basal carina strong. Segment I of antennæ as long as width of vertex; II nearly four times as long as I; III about three times as long as I; IV two-thirds of I. Pronotum transversely rugose; callosities large, surface depressed between and before them; anterior edge feebly emarginate; sides carinate, slightly sinuate, armed with a stout bristle anteriorly. Elytra nearly parallel. Dextral clasper with a blade-like apex bent at right angles to the stem, its apical margin oblique; sinistral terete, its acute curved apex lying just under the margin of genital segment.

Color black, dull; cheeks at base, loræ, a line next the inner margin of the eyes, collum and anterior margin of pronotum castaneous; posterior lobe of pronotum and lateral carinæ, scutellum, femora, coxæ and pleural pieces mostly, bright red; elytra with a slender hyaline costal line, the marginal vein black; vestiture of fine white scale-like hairs intermixed with longer testaceous ones.

Female stouter; vertex more swollen, pronotum less rugose, callosities concolorous; second antennal segment shorter, castaneous marks on head reduced, red of pronotum and femora brighter.

Described from numerous examples taken by me on white sage in San Diego County from April to June.

Holotype, male, No. 2559, and allotype, female, No. 2560, Mus. Calif. Acad. Sci., taken by E. P. Van Duzee, June 8 and 20, 1913, respectively, at **Alpine, San Diego County, California.**

SOUTHERN CALIFORNIA COLLECTING NOTES

BY A. C. DAVIS

Garden Grove, California

During the spring and summer of 1927 a number of very interesting Coleoptera were taken in various localities in southern California. I have thought it worth while to record these captures, and a number of new or little known facts regarding the habits of these species and the methods of collecting them.

Cactophagus validus Lec. is to be found sparingly under decomposing *Opuntia* at Newport Beach and Laguna from May until September, and probably later. Piles of cactus at the edges of cleared land usually yield specimens of this beetle. The adults are not very active, and usually drop when alarmed. The larva bores in the stalks of the cactus. Several larvæ and pupæ were dug out, and adults have since emerged from these. Associated with this species, but in the more thoroughly decomposed stalks, are three species of *Hololepta*.

Anoplium albofasciatum Linell was taken May 29, in Red Rock Canyon, about thirty-five miles northeast of Mojave. This species is nocturnal, and may be taken by searching the cholla cactus, *Opuntia bigelovii* Engelm., with a lantern. The spines of this cactus are so sharp and thickly set that small insects such as *Hippodamia convergens* are frequently impaled as they attempt to alight, but *Anoplium* seems to have no difficulty. This species is very sluggish, and must be pulled from among the spines with tweezers. Two or three pairs were seen in coitu. This, and a number of fresh exit holes, seem to indicate that the stalks of this cactus are the food plant of the beetle. A very large *Monilema* was taken by Mr. R. E. Barrett the same night on the base of one of the cactus stalks.

Thyce fossiger Csy. was taken in some numbers at Garden Grove, California, flying about the fruit trees at dusk. The punctuality with which these insects appear and disappear is truly remarkable. During the middle of June the appearance of the first *Thyce* can be timed to within three or four minutes or less. Not more than four minutes thereafter the flight is in full swing, and lasts about twenty to twenty-five minutes, when every individual disappears almost at once. The beetles fly very rapidly, and circle about the tops of the trees. The females are relatively scarce.

A NOTE ON THE PARASITISM OF HIPPODAMIA

BY A. C. DAVIS

During the month of July 1927, several cocoons of the ladybird parasite *Dinocampus coccinellæ* (Schrank) were collected from pepper plants, and three or four adults were reared from these. It is stated by those who have had experience with this parasite that the ladybird is fastened to the leaf by the cocoon and cannot get away, although it may live for several days. That there may be exceptions to the rule was shown in one case that came under my observation. The parasitized ladybird, a small *Hippodamia convergens* var. *ambigua* Lec. was still alive and fairly vigorous when found. The cocoon of the parasite was carefully pulled free and placed in a vial. Being curious to see whether or not the ladybird would eventually recover, and not having a second vial at hand, I placed it in the one containing the cocoon, where it raced about with quick, jerky movements that resembled those of a Buprestid more than those of a Coccinellid. Upon encountering the cocoon it settled down upon it and remained motionless.

During the next twenty-four hours the cocoon was taken away from the ladybird several times, and each time the frantic hunt was repeated. When found, the cocoon was grasped in all six legs and turned from side to side, the maxillæ stroking its surface all the while. Being satisfied, the ladybird worked its tarsi firmly into the loose silk of the cocoon and remained motionless, sometimes on its back or side.

The last two or three times the ladybird was weak and had to be persuaded to move. After twenty-four hours it was separated from the cocoon and given a leaf with some aphids upon it, and eagerly devoured a number. From that time on it behaved more normally. When the cocoon was encountered it would be carefully felt over with the maxillæ but not otherwise touched. Though food and an occasional small drop of water were given it, the ladybird died in eight days.

From the above case it appears that the captivity of the parasitized ladybird may be purely voluntary in some cases.

SOME VACATION BITERS

BY E. O. ESSIG

During my regular summer vacation at Upper Echo Lake, altitude 7500 feet, in the El Dorado National Forest of El Dorado County, in July 1927, I captured a number of insects which specialize in making it uncomfortable for the members of the human race who intrude upon their solitary places. Chief of these tormentors is the Tahoe snow mosquito, *Aedes communis* (De Geer) *tahoensis* Dyar, but since it is confidently expected, its pestiferous presence is screened out or brushed aside with only the usual unpublishable comments. There were some others of the dipterous order, however, which brought forth strong speech and violent actions on the part of the human kind. A considerable series of specimens, which were not slapped or otherwise beaten beyond recognition, were taken with the express intention of getting their names and going into print regarding their behavior. They were herded together into a mailing box under the general title of "some vacation biters" and forwarded to Dr. J. M. Aldrich of the National Museum for identification, with the result that they are to be thus publicly exposed.

The lepid fly, *Symphoromyia pachyceras* Williston and *S. atripes* Bigot, share in first place as biters. They are similar in size, shape and color, but the former appears to have a pubescent abdomen while that of the latter is shiny. The length averages from about 4.5 to 6 mm., and the color from bluish gray to black. They assault you anywhere, but prefer to delay the attack until you are comfortably seated in the shade under a tree, or on the porch of or in your cabin. There is a buzz and then a sharp bite before you can bring your free hand into play. They also frequently appear on the trails, but seldom far from the lake shores. I captured a nice series of both species on the windows of my cabin during the latter part of July.

The yellow gnat, *Prosimulium fulvum* (Coquillett), was a close second to the preceding pair, but never so numerous. It struck you on the trails or when you were trying to work with both hands and always got a bite before you could retaliate. It is exceedingly quick to appear; you hear a rather loud buzz and before the noise ceases you know right where to hit, and he

always stays until properly flattened. During the past three years it has indelibly stamped its appearance on my mind, but it was not until this summer that I was sufficiently gentle to secure specimens entire enough to permit of determination. The fly is 4 mm. long, strongly humped, and of an even amber-yellow color with dark eyes.

The deer fly, *Chrysops surdus* O. S., was always blustering around you on the hot trails and seemed to delight in annoying both man and beast. If you took off your hat to let out the steam and to mop off the perspiration, one was sure to scramble in among the hair or search out the bald spot as a place for operations. Another species, however, determined as *Chrysops* sp. near *sordidus* O. S., was even more abundant and troublesome. It is 9 mm. long, shining black, and has the wings heavily clouded with black and two large orange spots on the sides at the base of the abdomen.

Osburn's tabanid, *Tabanus osburni* Hine, is a large velvety black and gray species 12 to 13 mm. long, which will bite if given half a chance, but its large size and loud buzzing make it an easy prey for the suspecting entomologist.

A single specimen of an empid fly, *Rhamphomyia* sp., was so quickly flattened against the back of my neck that I never knew its exact purpose there. After one has become accustomed to dealing with such aggressive and hungry individuals as those already listed, he is not to be blamed if his action is timed slightly ahead of the fly as in this particular case. I shall have some more to tell you about them next fall.

NOTE

An outbreak of the silver-spotted halisidota, *Halisidota argentata* Packard, is now (April 1, 1928), occurring along the Noyo River, near Fort Bragg, Mendocino County, California. The caterpillars are practically full grown and are present in great numbers. They are attacking chiefly the Douglas fir, *Pseudotsuga taxifolia* (Lamb.) and are defoliating young trees.—E. O. Essig.

ON THE WING—A RETROSPECT

BY JAMES E. COTTLE

San Francisco, California

Only recently, I stood one noonday at the intersection of California and Mason streets in San Francisco County waiting for a car. Around and about me roared the traffic of a great city and on all sides arose tall monuments of steel and concrete.

On memory's wing I was transported back in mind to over fifty years ago—fifty-five to be exact. Still standing on the selfsame spot, the same eyes mirroring the selfsame vista as it then appeared, and my heart sank as I looked.

I was then a youngster, scarcely in my teens. Life and the future all before me, like the city of that day and the city of today. Time works its miracles in places as it does in persons. The storied masonry of the present was then of humble magnitude and simple architecture. Where now the marts of commerce rear their heads were open fields and empty lots, the hillsides then unmarked with rails and passing street cars.

And here was where I had in my boyish pranks hunted butterflies. Where now the populace are playing tag and hop, skip and jump with automobiles, and chasing the elusive nimble dollar in the eternal, age-old game of "hide and seek."

A car went by me as I mused, the one I had been waiting for. I let it pass. So wrapped in retrospection, I was powerless to break the spell.

Again I saw myself in later years with net in hand, pursuing lazy, dusty-winged butterflies among the fragrant blue and yellow lupins and remembered that it was in this same locality and on the hillside lying between California, Pine and Stockton streets and Grant Avenue, that dear old Dr. Herman Behr of honored memory had first discovered the larva of *Samia rubra* feeding upon the bushes of the *Ceanothi*, which then flourished there. Search there now for either bushes or butterflies. Not with the Lick telescope will you be rewarded by a trace of either! Like the good Doctor they are of the past.

How vividly do I recall my first activities and virgin efforts in the pursuit of entomology, accompanied and tutored by my esteemed friends, Dr. Behr and G. T. O. Mueller, scientists and gentlemen, if ever there were such, both of whom have long since laid down their nets and crossed the great Ridge, over which we all must ourselves some day pass.

The spots I visited with them and others have been erased forever by the city's growth, and even the collecting grounds in both the suburbs and surrounding counties have been rendered sterile and worthless, from a collector's standpoint by the encroaching real estate man, the golf clubs and their members. Hence it is the golfers, not the gophers, who work havoc and destruction here to scientific research. The beauties of nature are by and through them trampled under foot, destroyed, defiled, eradicated. No architect, however gifted, has successfully competed with the plans of Mother Nature. I have mentioned only one collecting ground of those golden days. To my mind as I am writing come the memories of others, all prolific, all destroyed. They follow:

Mountain Lake, a garden spot of beauty in the close vicinity of the Marine Hospital, covering a radius of two miles and sprinkled over with scrub oak, willows, shrubbery of all kinds, and the fragrant lupin. Here in this little Eden flew the varieties of *Danaus plexippus*, *Melitæa chalcædona*, *Phyciodes pratensis*, *Colias eurytheme*, *Chrysophanus helloides*, *Pyrameis atalanta*, *huntera*, *cardui*, *caryæ*, *Thecla melinus*, *augustus*, *dumetorum*, *Lycæna antiacis*, *sagittigera*, *xerces*, *mertila*, *pheres* and *acmon*, *Anthocharis reakirti*, *sara* and *hyantis* and numerous Noctuidæ, Geometridæ and Bombycoidæ.

Still another beauty spot and dear to the collector's heart was south of Golden Gate Park, that beautiful piece of landscape covering one thousand and thirteen acres, in its five-mile length and breadth of three miles. Much of the same material could have been captured there, but alas, it is now built over and magnificent houses have taken their places. Another fruitful field for the entomologist was the Italian cemetery adjoining the Chinese burying ground and situated in the vicinity of

what is now known as Thirty-third Avenue and Clement Street. Here the golfers reign, and the home and former haunts of *Merolonche lupeni* and *Arctia ornata*, and *ochracea* and many rare Grometridæ are known to them no more.

Still another bounteous butterfly field was that land back of the old Calvary cemetery where flew the rare little *Synanthedon polygoni* and *Hepialus sequoiolus*. It was reported that *Satyrus sthenele* was taken there, but as Mueller, Letcher and myself hunted at all seasons of the year and were not successful in seeing one single specimen, I doubt the accuracy of the report.

Another never-to-be-forgotten collecting ground lay in the near vicinity of Lake Merced. One-half mile south of this lake, one early June day I captured, "single-handed and alone," ninety-two *Argynnis callippe*. *Melitæa editha* could there be taken by the hundred, as could also *Papilio hirsuta* in great numbers. The first erasure of this field was caused by the Italian vegetable venders, completed later by the Knights of the Golf Stick.

On the slopes of the hills about a mile south of this lake was a beautiful field, the home of *Arctia edwardsi* and many beautiful Noctuidæ. These slopes are near Ocean View and have partly escaped the intruder, but for how long I know not. On the slopes of the sand hills where now stands St. Joseph's Hospital, in the vicinity of Buena Vista and Park Hill avenues, at present built over by beautiful homes, was another notable spot where I often gathered cocoons of *Samia rubra* by the dozen from the branches of *Rhamnus californica* (Cascara) and larvæ of many species. In crossing the bay to Marin, Contra Costa and other adjacent counties, similar conditions are met with. Many of the old collecting grounds there also have been swept away, but of these fields I will speak later.

In the meantime let us indulge the hope that on the other Shore, wheresoever it be, that Behr, Letcher, Mueller, and in fact all the old collectors who have preceded us across the Great Divide, will have a location picked and nets enough to go around, when we shall join them there—but no golfing.—*Aloha!*

TWO INTERESTING ADDITIONS TO THE
HEMIPTEROUS FAUNA OF
CALIFORNIA

BY E. P. VAN DUZEE

Hypogeocoris slevini Van Duzee, n. sp.

Larger than *piceous* Say. Black, eyes, anterior margin of head and humeral angles of pronotum rufous, a large pale spot on anterior margin of pronotum, elytra pale, legs and rostrum honey-yellow. Length, 4 mm.

Head across the eyes distinctly broader than base of pronotum; black, broadly rufotestaceous anteriorly either side the black tylus; eyes and ocelli red; vertex polished, impressed median line of tylus traceable nearly to base of vertex; ocelli placed midway between the eyes and the median line. Antennæ short and stout, black, sparingly clothed with stiff brown hairs, segment I three-fourths the length of III; II a little shorter than IV. Pronotum two-thirds as long as wide, polished, with a few coarse scattered punctures which omit the large transverse area including the callosities; black with a large lunate area anteriorly and a cloud on each humerus ivory-yellow. Scutellum equilateral, black, with a few large scattering punctures that leave an obscure smooth median line. Elytra subhyaline, honey-yellow, polished, with a few obscure punctures along the veins; thickened scutellar margins of clavus and the ulnar vein medially black; costal membrane expanded, nearly as wide as the clavus; membrane hyaline, veins indistinct. Beneath black, polished, coarsely punctured on the pleuræ; acetabulæ, anterior margin of prothorax, legs and rostrum honey-yellow, the latter with a black line below; anterior femora moderately incrassate, with a row of long stiff hairs below.

Holotype, a unique female, No. 2561, Mus. Calif. Acad. Sci., taken by Mr. L. S. Slevin, October 5, 1919, at **Paraiso Springs, Monterey County California**. This is a very distinct species that cannot be compared with any other known to me.

This insect pertains to genus *Isthmocoris* McAtee for which Montondon had a year earlier founded the genus *Hypogeocoris* with *violaceous* Sign. as type. Unfortunately this paper by Montondon failed to reach me before the publication of my catalogue. The Japanese *Geocoris itonis* Horv. (1905) also belongs to this genus. It is a large and distinct species of which Dr. E. C. Van Dyke took a specimen at Welsohn, Manchuria, September 3, 1923. *Geocoris sonoraënsis* V. D., like *punctipes* Say, is intermediate between this genus and *Geocoris*, having the anterior angle of the pronotum meeting the middle of the eyes.

Dictyssa mira Van Duzee, n. sp.

Unlike any other species known to me; pale greenish; elytra subcoriaceous, brownish with an oblique row of partially hyaline spots marked behind with fuscous, apex fuscous with a marginal row of semicircular pale spots. Length, 4.5 mm.

Male. Characters of head, pronotum and scutellum essentially those of *areolata* Melich. but with the anterior edge of pronotum rather less elevated; elytra thicker and more coriaceous than in the allied species, the hyaline areas but imperfectly transparent; veins thickened but not strongly differentiated.

Color greenish white; clypeus and legs tinged with fulvous; anterior margin of scutellum with a transverse fuscous cloud each side of center; antennæ fuscous or black, a spot above their base and one behind the eye fuscous; elytra pale brown; basal half of costa and the scutellar suture, a row of about five semicircular spots and an oblique vitta, whitish, in places subhyaline; apex of the two larger pale discal areoles blackish and there is a blackish mark at base; apex broadly pale fuscous, the apex of the clavus more or less fuscous.

Female darker, the colors more contrasting, the fuscous on the elytra becoming black in places. Described from ten examples.

Holotype, male, No. 2562, and allotype, female, No. 2563, Mus. Calif. Acad. Sci., and eight paratypes taken by E. P. Van Duzee, August 23, 1924, two miles west of **Mountain Springs, San Diego County, California.**

This is one of the larger species of the genus and very distinct by the more thickened elytra and its greenish white color, with oblique fuscous and pale vittæ, giving it much the aspect of a small Clastoptera.

Desmocerus californicus Horn. Several specimens, both male and female, were taken on the elder (*Sambucus glauca* Nutt.) during the latter part of April in and near Eaton Canyon wash, near Pasadena, California. This species must occur in some numbers near Laguna, as a number of emergence holes were seen in the older trees there. *D. californicus* is one of the few species to which the saying "nothing is rare if you go to the right place at the right time" cannot be applied. In a day of looking over elder trees my largest bag has been eight specimens and a "crick" in the back of my neck. The beetles do not move fast and, once seen, may usually be secured without much difficulty.—A. C. Davis.

THE PAN-PACIFIC ENTOMOLOGIST

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E. P. VAN DUZEE, Editor

S. B. FREEBORN, Ph.D., Treasurer

The California Academy of Sciences as well as the Pacific Coast Entomological Society has sustained a sad loss in the recent death of Mr. C. L. Fox. Mr. Charles Louis Fox was born at Plymouth, England, June 12, 1869, and died at the home of his brother, Dr. G. R. Fox, in London, England, March 13, 1928. Coming to this country when a young man he was first interested in orange growing at Riverside, California. Later, removing to San Francisco, he became connected with the accounting firm of Price Waterhouse and Company, with whom he remained until the time of his death. After coming to San Francisco he became interested in collecting and studying the butterflies and formed a most excellent collection of our Californian species, neatly mounted on glass Denton mounts. This collection was acquired by the California Academy of Sciences some time ago. About 1920 he took up the collection and serious study of our western Hymenoptera, amassing a large collection of these insects which he left by will to the California Academy of Sciences. His systematic studies were confined to the American Bembecidæ and the genera *Pepsis* and *Nomada*. On the latter genus his studies had only begun when failing health obliged him to relinquish them and to return to England to be with his relatives. Mr. Fox had a most pleasing personality which won him the friendship and love of all with whom he came in contact. A fuller biographical sketch will be published later.

Prof. W. S. Blatchley of Indianapolis was a welcome visitor at the California Academy of Sciences during a part of March and April. While here he sorted over and put in order most of the Academy's collection of Orthoptera.

Mr. H. G. Barber, our well-known hemipterist of Roselle Park, New Jersey, was another welcome visitor in April. During the week or two he spent in San Francisco he found time to make a careful examination of a portion of the Academy's collection of Hemiptera and to do some collecting near this city, including a trip to Yorkville, Mendocino County, as the guest of Mr. E. R. Leach.

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